

Claims

What is claimed is:

1. A cylinder block for an internal combustion engine, comprising:  
at least one cylinder bore;  
a coolant jacket at least partially surrounding the at least one cylinder bore; and  
a deck for attachment of a cylinder head;  
wherein the deck is an open top deck and wherein the coolant jacket includes an upper portion and a lower portion having first and second widths, respectively, and an intermediate portion between the upper and lower portions, the intermediate portion having a third width which is greater than the first and second widths.
2. The cylinder block of Claim 1 wherein the upper portion is adjacent the top deck.
3. The cylinder block of Claim 1 wherein the lower portion is adjacent the base of the coolant jacket.
4. The cylinder block of Claim 2 wherein the lower portion is adjacent the base of the coolant jacket.
5. The cylinder block of Claim 1, wherein the at least one cylinder bore is a linerless cylinder bore.
6. The cylinder block of Claim 5, comprising at least two cylinder bores, the bores having conjoined cylinder walls.

7. The cylinder block of Claim 1, wherein the first and second widths are substantially the same.

8. The cylinder block of Claim 1, wherein the coolant jacket has a first taper between the upper portion and the intermediate portion, and a second taper between the intermediate portion and the lower portion, the first and second tapers being in the range of about 1° to about 10° from vertical.

9. The cylinder block of Claim 1, wherein the block has a parting line, the intermediate portion of the coolant jacket and parting line being coplanar.

10. A cylinder block for an internal combustion engine, the cylinder block comprising:

at least one cylinder bore;

a coolant jacket at least partially surrounding the at least one cylinder bore and having a top and a base; and

a parting line;

wherein the coolant jacket extends through the parting line and wherein the coolant jacket has a width which tapers in a direction of increasing width from the top of the coolant jacket to the parting line and tapers in a direction of decreasing width from the parting line to the base of the coolant jacket.

11. The cylinder block of Claim 10, wherein the coolant jacket width tapers in each direction in the range of about 1° to about 10° from vertical.

12. A method for manufacturing a cylinder block for an internal combustion engine, comprising:

providing a coolant jacket casting core having an upper portion and a lower portion having first and second widths, respectively, and an intermediate portion between the upper and lower portions, the intermediate portion having a third width which is greater than the first and second widths;

casting a cylinder block around the coolant jacket casting core; and

removing the cooling jacket casting core to leave a coolant jacket formed in the cylinder block.

13. The method of Claim 12, wherein coolant jacket casting core has a first taper between the upper portion and the intermediate portion, and a second taper between the intermediate portion and the lower portion, the first and second tapers being in the range of about 1° to about 10° from vertical.

14. The method of claim 12, wherein said step of providing a coolant jacket casting core includes:

providing a core box including upper and lower detachable parts defining a core volume having an upper portion and a lower portion having first and second widths, respectively, and an intermediate portion between the upper and lower portions, the intermediate portion having a third width which is greater than the first and second widths, said core box parts being joinable at a split line co-planar with the intermediate portion of the core volume; and

disposing a quantity of core material in the core volume.

15. The method of claim 12, wherein said step of providing a coolant jacket casting core comprises:

providing a core box having a top and a bottom and including upper and lower detachable parts defining a core volume, said core box parts being joinable at a split line located substantially midway between the top and the bottom of the core box; and

disposing a quantity of core material in the core volume.